



Proton pump inhibitor use and risk of spontaneous bacterial peritonitis in cirrhotic patients: a systematic review and meta-analysis

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ABSTRACT. We used a meta-analysis approach to investigate the association between proton pump inhibitor (PPI) use and risk of spontaneous bacterial peritonitis (SBP) in cirrhotic patients. We searched Ovid Medline, Embase, and the Cochrane Library to identify eligible studies. We included studies that compared cirrhotic patients who did or did not use PPIs. The primary outcome was SBP, and the secondary outcome was overall bacterial infection. Results were pooled using random-effect models. This process led to identification of 12 journal articles and 5 conference abstracts. The pooled data showed that PPI use in patients with cirrhosis and ascites was significantly associated with an increased risk of SBP [odds ratio (OR) = 2.17; 95%

confidence interval (CI) = 1.46-3.23; $P < 0.05$; $I^2 = 85.6\%$] and overall risk of bacterial infection (OR = 1.98; 95%CI = 1.36-2.87; $P < 0.05$; $I^2 = 0$). Subgroup analysis revealed that journal articles and studies reporting adjusted effect estimates demonstrated that PPI users had a significantly increased risk of SBP (OR = 2.13; 95%CI = 1.61-2.82; $P < 0.05$; $I^2 = 29.4\%$; and OR = 1.98; 95%CI = 1.42-2.77; $P < 0.05$; $I^2 = 67\%$, respectively). In conclusion, PPI use increased the risk of SBP and overall bacterial infection in patients with cirrhosis and ascites. PPIs should be administered after careful assessment of the indications in cirrhotic patients. Future well-designed prospective studies are warranted to clarify the dose relationships and to compare infection risks associated with different classes of PPIs.

Key words: Cirrhosis; Meta-analysis; Proton pump inhibitor; Spontaneous bacterial peritonitis